C-2.3 Summarize the periodic table's property trends (including electron configuration, ionization energy, electron affinity, atomic size, ionic size, and reactivity).

Revised Taxonomy Level 2.4 <u>Summarize</u> conceptual knowledge

In Physical Science students

- Become familiar with the periodic table in terms of
  - Locating periods and groups
  - Locating metals, metalloids, and nonmetals
  - Locating and listing referenced elements when prompted with a period number or group number
  - Determining a given element's atomic number.
  - Determining the number of electrons that an atom of a given element contains.
  - Determining how many energy levels are occupied in a given element by recognizing that the period in which an element appears on the table indicates the number of occupied energy levels.
  - Determining the number of valence electrons.
- Explain the trends of the periodic table based on the elements' valence electrons (PS-2.3)
  - Valence electrons across a period. (1-3 only)
  - Valence electrons top to bottom within a group.
  - Energy levels across a period.
  - Energy levels from top to bottom within a group.

It is essential for all students to

- Identify the chemical and physical properties off elements according to their location on the periodic table.
- Understand the structure of the periodic table and be able to explain the properties on which it is based and its unique shape..
- Understand how the value of atomic characteristics and property trends vary from element to element across and from top to bottom on the periodic table
  - Including
    - Electron configuration
    - Ionization energy
    - Electron Affinity
    - Atomic radius
    - Ionic radius
    - Reactivity
  - Be able to describe each trend in terms of how the value changes across a given period and from top to bottom in a given group.
  - Understand why the trend occurs (according to atomic structure and periodic table arrangement).
  - Be able to predict relative values (greater or smaller) for each of the characteristics or properties for a given set of elements based on their positions on the periodic table.

Tradition Chemistry differentiation

- Understand the trend of electronegativity values on the periodic table

Assessment
The revised taxonomy verb, summarize means "to abstract a general theme or major point" For this indicator, the major focus of assessment should be to insure that students have a conceptual understanding of how the periodic table is arranged so that it can be used to infer the characteristics and properties of elements. Conceptual knowledge requires that students understand the interrelationships among the basic elements within a larger structure that enable them to function together. In this case students understand how the periodic table is used as a tool for chemistry